

percent change worksheet word problems

Percent change worksheet word problems are an essential tool for students and individuals looking to grasp the concept of percent change in various contexts. Understanding how to calculate percent change is crucial in fields ranging from finance to science, making it a valuable skill for anyone. This article will explore what percent change is, how to calculate it, the significance of percent change worksheets, and provide various examples of word problems that illustrate the concept in real-life scenarios.

Understanding Percent Change

Percent change is a measure that describes how much a quantity has increased or decreased in relation to its original value. It is calculated using the formula:

$$\text{Percent Change} = \frac{\text{New Value} - \text{Old Value}}{\text{Old Value}} \times 100$$

This formula helps to quantify the change in percentage terms, making it easier to compare different situations.

Why Percent Change Matters

1. Financial Decisions: Knowing how to calculate percent change can help individuals make informed decisions about investments, savings, and expenses.
2. Business Analysis: Companies often use percent change to assess sales performance, customer growth, and market trends.
3. Academic Performance: Students can use percent change to track their grades over time, determining how their performance has changed relative to previous assessments.
4. Scientific Research: In experiments, researchers may need to report changes in measurements, such as temperature or volume, in percentage terms.

Creating a Percent Change Worksheet

A percent change worksheet can serve as a practical exercise for learners to practice their skills. Here's how to create one:

1. **Identify Key Concepts:** Before creating problems, ensure that the worksheet includes clear explanations of the percent change formula and examples.
2. **Develop a Variety of Problems:** Include problems that cover different scenarios, such as financial changes, population changes, and academic performance changes.
3. **Provide Space for Calculations:** Ensure that there is enough space for students to show their work, as this helps reinforce their understanding of the calculation process.
4. **Include Answer Keys:** To facilitate self-assessment, provide an answer key at the end of the worksheet.

Types of Problems to Include

1. **Financial Problems:** These could involve changes in prices, salaries, or investment values.
2. **Population Changes:** Problems might include changes in city populations over a certain period.
3. **Academic Performance:** Questions could relate to changes in student test scores or grades.
4. **Sports Statistics:** Problems can involve changes in player statistics, such as points scored or batting averages.

Examples of Percent Change Word Problems

Here are several examples of word problems that can be included in a percent change worksheet:

Example 1: Financial Scenario

A pair of shoes originally costs \$80. After a sale, the price drops to \$60. What is the percent change in the price of the shoes?

Solution Steps:

1. **Identify Old and New Values:**

- Old Value = \$80

- New Value = \$60

2. **Apply the Percent Change Formula:**

$$\begin{aligned} \text{Percent Change} &= \frac{60 - 80}{80} \times 100 = \frac{-20}{80} \times 100 = -25\% \end{aligned}$$

The price of the shoes decreased by 25%.

Example 2: Population Change

A small town had a population of 1,200 people in 2020. By 2023, the population increased to 1,500 people. What is the percent change in population?

Solution Steps:

1. Identify Old and New Values:

- Old Value = 1,200

- New Value = 1,500

2. Apply the Percent Change Formula:

$$\text{Percent Change} = \frac{1500 - 1200}{1200} \times 100 = \frac{300}{1200} \times 100 = 25\%$$

The population increased by 25%.

Example 3: Academic Performance

Sarah scored 75 out of 100 on her first exam and 90 out of 100 on her second exam. What is the percent change in her score?

Solution Steps:

1. Identify Old and New Values:

- Old Value = 75

- New Value = 90

2. Apply the Percent Change Formula:

$$\text{Percent Change} = \frac{90 - 75}{75} \times 100 = \frac{15}{75} \times 100 = 20\%$$

Sarah's score improved by 20%.

Example 4: Sports Statistics

A basketball player scored 20 points per game last season and increased his average to 25 points per game this season. What is the percent change in his scoring average?

Solution Steps:

1. Identify Old and New Values:

- Old Value = 20

- New Value = 25

2. Apply the Percent Change Formula:

$$\text{Percent Change} = \frac{25 - 20}{20} \times 100 = \frac{5}{20} \times 100 = 25\%$$

The player's scoring average increased by 25%.

Practice Problems

To reinforce learning, here are some practice problems for students to solve:

1. A laptop originally costs \$1,200. It is now on sale for \$900. What is the percent change in the laptop's price?
2. A city's population was 50,000 in 2010 and has grown to 65,000 in 2020. What is the percent change in population?
3. John scored 82 on his first test and 76 on his second test. What is the percent change in his score?
4. A company's revenue was \$500,000 last year and is \$600,000 this year. What is the percent change in revenue?
5. A car's mileage improved from 30 miles per gallon to 36 miles per gallon. What is the percent change in mileage?

Conclusion

In conclusion, percent change worksheet word problems provide an effective means for students and individuals to develop their understanding of percent change in various applications. By exploring financial, demographic, academic, and sports-related scenarios, learners can apply the concept of percent change in a practical way. Through practice and real-world examples, mastering percent change becomes an attainable goal, equipping individuals with the skills necessary for informed decision-making in everyday life.

Frequently Asked Questions

What is percent change and how is it calculated?

Percent change is a way to express the change in a value as a percentage of the original value. It is calculated using the formula: $((\text{new value} - \text{old value}) / |\text{old value}|) \times 100$.

How do you set up a word problem involving percent change?

To set up a word problem involving percent change, first identify the original value and the new value. Then, formulate a question that asks for the percent increase or decrease between these two values.

What are common scenarios where percent change word problems might be used?

Common scenarios include sales price changes, population growth, stock market fluctuations, and changes in test scores or grades.

Can you provide an example of a percent change word problem?

Sure! If a shirt originally costs \$50 and is now on sale for \$35, what is the percent decrease in price? The percent change is calculated as $((35 - 50) / 50) 100 = -30\%$. So, the price decreased by 30%.

What resources are available for practicing percent change word problems?

Resources include online worksheets, educational websites like Khan Academy, math workbooks, and practice problems available in math textbooks.

How do you check your work after solving a percent change problem?

To check your work, you can reverse the calculation by applying the percent change to the new value to see if you arrive back at the original value. Alternatively, you can use a calculator to verify your calculations.

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